

Identifying Hail Signatures in Satellite Imagery from the 9-10 August 2011 Severe Weather Event

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Severe thunderstorms can produce large hail that causes property damage, livestock fatalities, and crop failure. However, detailed storm surveys of hail damage conducted by the National Weather Service (NWS) are not required. Current gaps also exist between Storm Prediction Center (SPC) hail damage estimates and crop-insurance payouts. NASA's Moderate Resolution Imaging Spectroradiometer (MODIS) instrument aboard the Terra and Aqua satellites can be used to support NWS damage assessments, particularly to crops during the growing season. The two-day severe weather event across western Nebraska and central Kansas during 9-10 August 2011 offers a case study for investigating hail damage signatures by examining changes in Normalized Difference Vegetation Index (NDVI) derived from MODIS imagery. By analyzing hail damage swaths in satellite imagery, potential economic losses due to crop damage can be quantified and further improve the estimation of weather impacts on agriculture without significantly increasing manpower requirements.